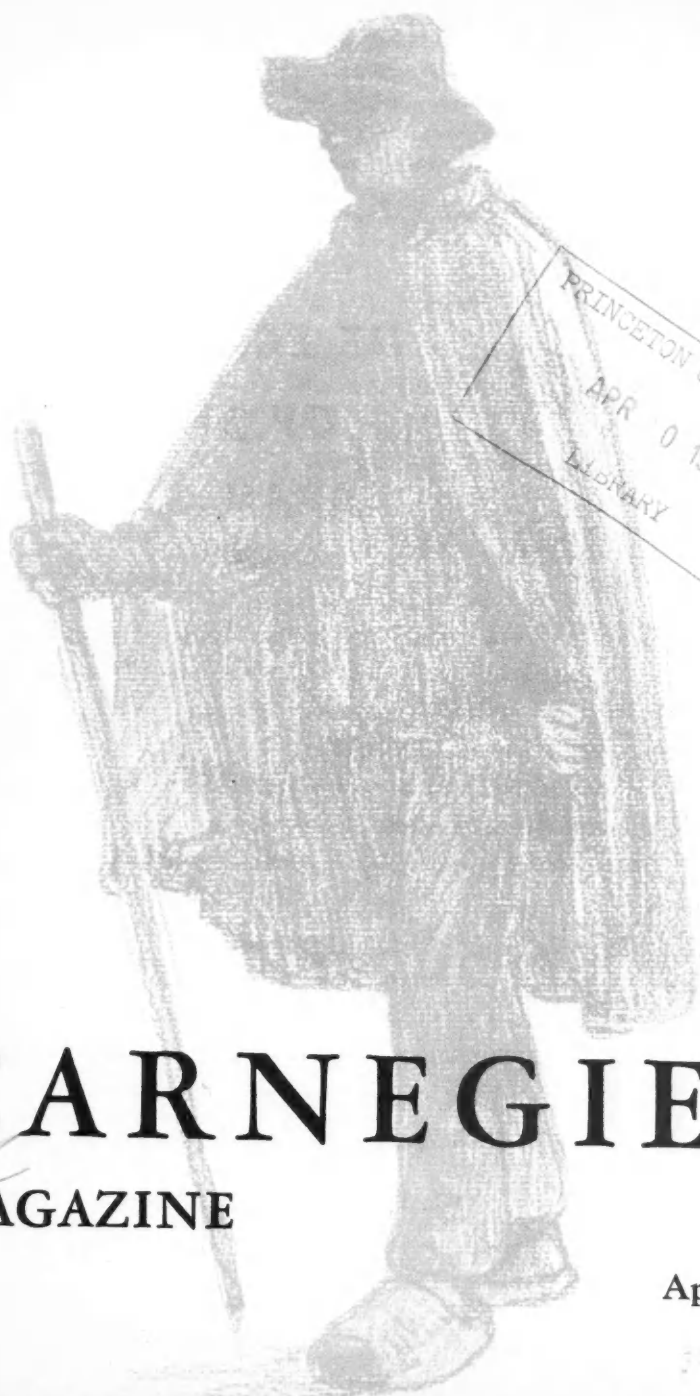


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# CARNEGIE

MAGAZINE

April 1961



*Carved ivory figure of  
Gamma Sennin, the Frog Sage,  
on exhibit at Carnegie Museum.*

## THE ECONOMY OF ANCIENT JAPAN

**T**his exquisitely carved ivory figure typifies the deep-rooted superstitions and beliefs characteristic of early Japan. The figure is of Gamma Sennin, the Frog Sage, one of an ascetic religious group supposed to have acquired supernatural powers and an extended term of life.

The superstitions of the Japanese took other forms, too. One was their suspicion of the outside world. For many years, they refused to trade with foreign nations—and even foreign sailors, shipwrecked on Japan's shores, were regarded with great distrust.

Obviously, with its limited trade and primitive agricultural economy, early Japan had little need for a formal banking system. Only after the country was opened up to the outside world in the 19th century, did it begin to develop commercial banking practices—without which no industrial and commercial nation can exist.

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**COVER**

*Shepherd with Staff* by Jean François Millet (1814-75), recently acquired by the Department of Fine Arts through the Leisser Art Fund. The French painter and graphic artist of peasant life, who worked with the Barbizon group, is widely known in this country from reproductions of his paintings, *The Angelus*, *The Gleaners*, and *The Sower*. Considerable liberty is taken in this cover color, since the original is black chalk.

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## APRIL CALENDAR

### SPECIAL EVENTS

Lecture, "Antique American Silver" (page 117)

Composers Forum: Walter Piston (page 123)

### SALON OF PHOTOGRAPHIC ART

The 48th annual International Pittsburgh Salon of Photographic Art will be held in the second-floor galleries April 15-May 14. The exhibit is sponsored by the Photographic Section of The Academy of Science and Art of Pittsburgh.

Color slides will be shown in Lecture Hall at 2:30 P.M., on Sunday, April 23.

### ASSOCIATED ARTISTS OF PITTSBURGH

The 51st annual AAP exhibition of local arts and crafts continues in the third-floor galleries through April 20. (See page 127.)

### LOCAL ARTIST SERIES

Tapestries by Marie Tuicillo Kelly will be shown in gallery K, April 30 through June 4. Mrs. Kelly, mother of three boys, is 1961 Artist of the Year at the Arts and Crafts Center. She was represented in the 1952 PITTSBURGH INTERNATIONAL and has won many AAP awards for oils, water colors, and tapestries. She studied at Carnegie Institute of Technology and is a graduate of the former Frick Teachers Training School.

### SPRING HOBBY CLASSES

An eight-week session of creative hobby classes for adults at Carnegie Institute begins April 17: Gardening, Drawing and Painting, Sculpture, Ballet, Photography, Interior Decorating, Toleware Painting, Sewing, Millinery, Charm and Beauty. Members of Carnegie Institute Society enjoy reduced fees. Division of Education will give detailed information as to instructors, schedules, and fees.

The annual student exhibit will be held in the Fine Arts galleries May 3-14, with preview the 2d.

### ANTIQUÉ SAMPLERS

Antique samplers from the Cooper Union Museum of the Decorative Arts will be shown in the Treasure Room the month of April. This exhibition is under auspices of the Pittsburgh Group, American Branch of the Embroiderers' Guild in London (page 115).

### NATIONAL LIBRARY WEEK

"For a richer, fuller life—read" is theme for National Library Week this year, April 16-22.

### KEROSENE LAMPS

Mostly made in Pittsburgh, 1870's to 1910, kerosene lamps—ship, caboose, parlor—may be seen near the Art and Nature Shop. From the George L. and Lilian I. Ball Memorial Collection.

### MINERAL SPECIMENS

Newly acquired by the Museum and displayed on the balcony above Dinosaur Hall are minerals from the Congo and South Africa, Australia, Brazil, Burma, Canada, Columbia, India, and Mexico, as well as Arizona, North Carolina, and Virginia.

### HOBBY HALL

WOODEN SHIPS AND IRON MEN, PEACE STAMPS, HOUSE MODELS, PRESIDENTS AND THEIR LADIES, LET THERE BE LIGHT, DOLLS GRANDMOTHER PLAYED WITH.

### NATURE CONTEST

April 8 will bring children from all over this area to the Museum to compete in the annual Nature Contest, with prizes of science books. Grades 5 to 8 start at 9:30 A.M., 9 to 12 at 1:30 P.M., in Hall of Architecture. Identification of animal and plant specimens and knowledge of Museum exhibits and natural history comprise the test.

### STORY HOUR

With sessions on April 4 and 18, at 10:30 A.M., preschool-story-hour series concludes this season. Laura E. Cathon will discuss summer reading with mothers who attend on the 18th.

Story hour for 5- to 12-year-olds continues at the Library each Saturday at 2:15 P.M.

### CHILDREN'S MOVING PICTURES

Free movies on Saturdays at 2:50 P.M., in Lecture Hall conclude with the April 29th program.

### SUNDAY ORGAN RECITALS

Marshall Bidwell presents a recital on the great organ of Music Hall each Sunday at 3:00 P.M., sponsored by the Arbuckle-Jamison Foundation.

On the 16th the Handel Chorale of Beaver County, George W. Bentel, director, will be Dr. Bidwell's guests. On the 23d the A Cappella Choir from West Virginia Wesleyan College will share his program; Irma Hopkins Collins, choir director.



# PITTSBURGH ARTS FESTIVAL

Friday, June 2, through Wednesday, June 7; location to be announced

THE Three Rivers Arts Festival last year stirred up a small hurricane of popular interest—even though it was victim of the less welcome variety, with rain and extremely high winds on its last day. Accordingly, plans for the second annual Arts Festival are moving ahead under expanded community sponsorship, with preliminary complications only serving to stimulate enthusiasm.

Construction work at the lower Hill terrace leading to the new Civic Auditorium has necessitated a change in Festival plans previously announced in local newspapers. Several new locations are currently being considered by the Festival Committee, and a decision will be announced soon.

In the meantime, the Carnegie Institute Arts Festival Committee with A. W. Schmidt as chairman is making plans for presentation of the visual arts and music for the public, without admission charge, on six afternoons and evenings, June 2 through 7. The Festival aims to encourage interest and appreciation by bringing the wealth of Pittsburgh-area art to the largest possible audience.

Paintings, water colors, the graphic arts, and crafts will be exhibited in some fifty small pavilions providing space for more than four hundred artists, and sculpture will be shown in the open.

The art exhibit will be open to all artists of the tristate area, eighteen years or older, who live within a 100-mile radius of Pittsburgh. There will be an entry fee of \$3.00. Announcements have been sent to local arts and crafts groups, and information may be obtained from Mrs. John K. Tabor, Museum 3-1540.

The jury of selection for the exhibit will be Leon A. Arkus, assistant director of fine arts at Carnegie Institute; David L. Smith, professor of art at Chatham College, and Russell Twiggs, of the painting, design, and sculpture department at Carnegie Institute of Technology.

An innovation will be architectural models, drawings, and photographs by architects participating on invitation.

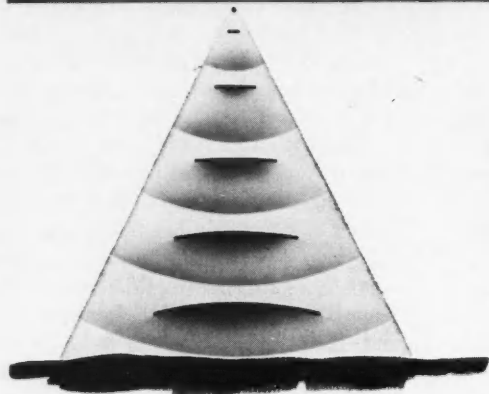
On each of the six nights music or drama will be offered.

The Pittsburgh Symphonetta under direction of Karl Kritz will play three evenings. One evening, Samuel Thavieu, concertmaster of the Pittsburgh Symphony, will be soloist in Mendelssohn's *Violin Concerto*; another, Theo Salzman, first cellist with the Symphony, will play the Haydn *Concerto*; and the third, Mendelssohn's *Incidental Music to "A Midsummer Night's Dream"* will be performed with choral part by the Women's Chorus of Duquesne University and spoken by three actors from the Pittsburgh Playhouse.

The other three evenings will bring a jazz concert by the Charles Bell Contemporary Jazz Quartet; production of the English morality play *Everyman* by the Pitt Players directed by Michael McHale; and a concert of the American Wind Symphony under baton of Robert Boudreau.

The Carnegie Institute Arts Festival Committee headed by Mr. Schmidt includes: Mrs. William D. Bickel, Mrs. J. Mabon Childs, Charles Denby, John J. Grove, Henry J. Heinz II, Mrs. James H. Heroy, Jr., William J. Miller, Henry Oliver, Jr., C. Jackson Seay, Donald Steinfirst, Mr. and Mrs. John K. Tabor, and Mrs. W. Peirce Widdoes.

# HOW DEEP IS THE OCEAN?




To the popular song writer of a few decades ago, this was a question calling for a romantic answer, but for the navigator of a ship, the answer must be real. Accurate measurement of the ocean's depth is vital to the ship's safe sailing. Lack of such knowledge might send the vessel aground.

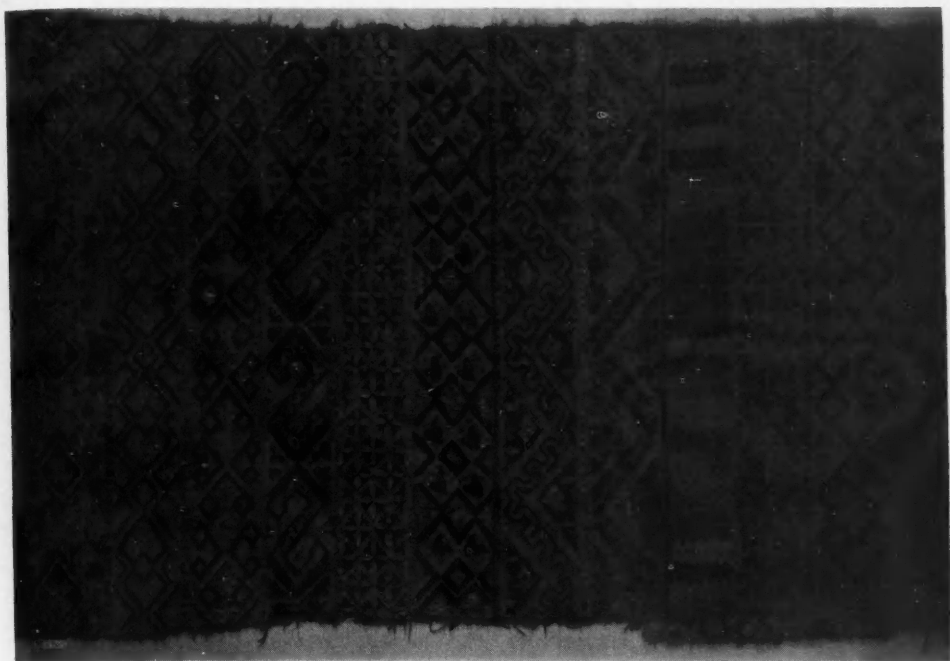
Long ago a navigator would drop overboard a lead weight attached to a line of heavy rope. This was called a plumbline or plummet. The rope, attached at

one end to the vessel, was marked off in fathoms, six feet each; and when the weight reached the bottom, the water's depth was recorded by the number of fathoms of rope submerged.

Today radio waves are beamed against the ocean floor. Since sound waves bounce back in the form of echoes when they hit a solid surface and since the speed of sound has been established, the depth of the water can be determined by the time it takes for those waves to return.

*Accurate measurement is as important to the chef cooking up a batch of Heinz soup as it is to the navigator sailing a ship. This time the measurement is of ingredients—the tomatoes, the cream, the special seasonings and spices—that provide the fine, full flavor that is known as Heinz.*

HEINZ  ...Symbol of UNIFORM QUALITY in foods



SPANISH SAMPLER OF THE SEVENTEENTH CENTURY  
Collection the Cooper Union Museum of the Decorative Arts, New York  
Gift of J. Pierpont Morgan

## EXEMPLARY SAMPLERS FROM THE PAST

HERBERT WEISSBERGER

We, Hermia, like two artificial gods,  
Have with our needles created both one flower,  
Both on one sampler, sitting on one cushion.

*A Midsummer Night's Dream*

THE exhibition of antique samplers in the Treasure Room this month is held under auspices of the Pittsburgh Group of the American Branch of the Embroiderers' Guild.

Ever since its foundation in 1906 in London, the Embroiderers' Guild has been following the tradition of the vigorous English arts and crafts movements that appeared

in the past century as a reaction against mechanization of the arts under increasing perfection of the machine. Consistent with established ideals, the Embroiderers' Guild not only insists on the highest standards of technique and skill in manual embroidery and needlework, but also encourages originality in individual design.

The American Branch was established in 1958, and by April, 1960, counted four hundred members and several local groups. Of these, the Pittsburgh Group was the first to receive a charter.

The honor came to the Pittsburgh Group as a just reward for the fine needle-point altar rug executed by twenty-five dedicated and gifted Pittsburgh ladies under supervision of Mrs. Bennett Oliver and presented to the National Cathedral in Washington, D. C., four years ago. The rug, composed of sixteen pieces, was designed by the Misses Tebbetts, of Kent, Connecticut, formerly of Pittsburgh. It may be recalled that the rug was exhibited in the Alcoa Building foyer during the 1957 Easter season.

The Group's first exhibition was held in the autumn of 1960 at the Fox Chapel Golf Club. In this, opportunity was given to admire numerous entries by our local needleworkers attesting to their sense of beauty, skill, and—so important—devotion to their craft.

To the Pittsburgh Group we wish to acknowledge indebtedness for financial aid with the present exhibition in the Treasure Room, as well as to record our gratitude to Mrs. Wilber S. King, its chairman, for having made selection of the samplers in New York in collaboration with Alice Baldwin Beer, curator of textiles of the Cooper Union Museum of the Decorative Arts.

Indeed, there could hardly have been a better source from which to borrow material for our exhibition than the Cooper Union Museum. This paradoxically venerable and very up-to-date Museum enjoys a world-wide reputation for one of the finest and largest collections of embroideries, tapestries, woven and printed fabrics. The Cooper Union for the Advancement of Science and Art was itself founded in 1860 by Peter Cooper, engineer, inventor, inspired philanthropist and citizen.

It was through Peter Cooper's granddaughters, Eleanor Garnier and Sarah Cooper Hewitt, that the founder's hope of having an art museum one day form an in-

tegral and important part of the Cooper Union became a reality in 1896. These ladies,—typical of those admirable American women of their period who pioneered in humanitarian and professional fields—by sheer enthusiasm, sense of purpose, and, as we like to think, aptly employed diplomacy, laid the foundations of a model museum of the decorative arts.

Much came by way of donations, and a princely one among these was the gift made by the late John Pierpont Morgan, who presented the Hewitt sisters with superb collections of textiles, including the one purchased from Don Francisco Miguel y Badia of Barcelona.

In offering this brief narrative, it is on our mind not only to render a well-deserved courtesy to the Cooper Union Museum and its director, Calvin S. Hathaway, for the loan of fine samplers; it is intended, too, to draw attention among our local lovers and students of the decorative arts to this unique place housed in an ancient New York building, where one may revel in treasures of past and present. With such inspiration, we believe the reader will become more forcefully associated with the aims of our own section of the decorative arts here at Carnegie Institute.

Although technical literature usually sets forth the idea that samplers are the work of little girls, there seems to be a deeper significance to them. For, aside from being the testing ground of coordination between little fingers and young minds, samplers—in a wider context—may be regarded as

Mr. Weissberger, curator of decorative arts at Carnegie Institute, is one of three advisers to the Pittsburgh Group, American Branch of the Embroiderers' Guild. The others are Alice Baldwin Beer, curator of textiles of the Cooper Union Museum of the Decorative Arts, and Edith A. Standen, curator of textiles at Metropolitan Museum of Art.



Silver Sugar Bowl (10 $\frac{1}{4}$ "") by the Philadelphia craftsman Joseph Shoemaker (1793-1839) from The Herbert DuPuy Collection, Decorative Arts Section, Carnegie Institute.

THE PUBLIC IS INVITED TO A LECTURE  
WITH COLORED SLIDES

MRS. KATHRYN BUHLER

Keeper of Silver, Boston Museum of Fine Arts  
outstanding authority on early American silver

## *Antique American Silver*

Wednesday, April 19, 11:00 A.M.

CARNEGIE LECTURE HALL

followed by luncheon at 12:00 Noon  
(Luncheon reservations limited to 100)

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documents of considerable importance. It may be quite safe to say that as such they are entitled to their place in the history of civilization. How to make a stitch or a loop or how to tie a knot with the help of a tool may be regarded as man's discovery in a remote age in the field of technology. One likes to recall here the dicta expounded by the German architect and art-theoretician, Gottfried Semper (1803-79), maintaining that what originally was functional may, in time, separate itself from the dictates of practical need and develop independently into a vehicle of its own, namely one of beauty.

And so, from the knowledge of how stitches could serve strictly utilitarian purposes, there evolved over the ages great works of art at the hand of the embroiderer. In this connection we would recall the so-

called Bayeux tapestry (probably twelfth century), which recorded pictorially the conquest of England by William the Conqueror; or ornate liturgical vestments embellished by the needleworker; or the numerous fine embroideries enhancing costume as well as domestic furniture and interiors of past and present.

Samplers, naturally, differ from one another in appearance and degree of accomplishment. The part played by the embroiderers' dexterity, discipline, repertory of stitches, choice of thread and pattern, even by national tradition, is brought out in the present show. It is an excellent selection, to be sure, embracing many countries and dating from the seventeenth to the nineteenth centuries, with several dated samplers included. Keeping in mind that the earliest dated specimen in the Victoria and Albert

Museum in London is of the year 1642, the visitor to the Treasure Room should find an English sampler of 1702 and one made in America in 1737 specially interesting from a historic point of view.

We should fail were we to limit ourselves to regarding an exhibition of antique samplers as accumulated record of bygone times from which to draw for our present need. With the new materials at one's disposal and the practice of new techniques, wonderful possibilities for creative work are laid open to the modern embroiderer. Skill and perfection in execution are—may I be forgiven for insisting on this commonplace—not only an end in themselves but also the tools for continuous creative growth.

May, then, the lovely samplers from the Cooper Union, as a demonstration of the needleworkers' art of their time, serve, too, as a forceful stimulus for those of our own day. *Sampler*, it should be remembered, is

derived from the Latin word *exemplar*, meaning "a pattern." And it is possibly in courageous choice of pattern, or fresh, inventive approach to design, that the modern embroiderer can excel. Let it be said that, side by side with embroideries of immaculate workmanship in traditional patterns, new visions have come to light, too, in Pittsburgh, in the ingenuous work of several of our talented artists and craftsmen in exhibitions during the recent past.

## CHILDREN AT THE INSTITUTE

**A**PRIL is a busy month at Carnegie Institute, with as many as 250 children arriving daily for conducted tours; this in addition to the groups led by their own school teachers. Many busloads combine a visit to the spring flower show at Phipps Conservatory, cafeteria luncheon, and tour of Museum and Fine Arts exhibits.

## For the first time in the Oakland area—you can bank in your car!

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# THE ACADEMIC MICROCOSM

Commenting on C. B. Snow's novel, "The Affair"

SOLOMON B. FREEHOF

THERE is a small poem by the Victorian poet laureate, Alfred, Lord Tennyson:

Flower in the crannied wall,  
I pluck you out of the crannies,  
I hold you here, root and all, in my hand,  
Little flower—but if I could understand  
What you are, root and all, and all in all,  
I should know what God and man is.

A generation ago these few lines were quoted frequently by all sorts of writers and speakers. They have been ignored and half forgotten in recent years. Evidently to our modern taste they are much too sentimental. Yet what the poet said actually had scientific validity. In fact, the lines have greater scientific validity today than when he said them.

The poet said that if he understood the flower in his hand, this little fragment of life, he would be closer to solving the problems of the great universe itself. And is it not so? The flower has color. These particular petals vibrate to give forth certain light rays that touch our eyes and produce the sensation of color. And is that not a mystery?

This flower, whatever it was, looked exactly like its parent flower, like all the parents of that particular species, with slight variations, for thousands of years. This image was carried in some tiny gene or chromosome. The mystery of heredity is involved there; and if we could solve it for the flower, we could solve it for mankind.

Now we know that the living flower con-

tains radioactive carbon from the cosmic rays. Thus it is bound together with the newly discovered Allen belts of radiation, hundreds of miles beyond the earth's atmosphere. If we could understand the radioactivity of every flower, we might understand something of the radioactivity of the dangerous world around us that may yet debar us from visiting the moon and the planets.

Then as we go deeper into the structure of the plant, we find the atom, the electron, the neutron—exactly the same "building bricks" as in the farthest limits of the universe. If we could comprehend the relationship of this flower structure to the structure of the farthest galaxy, then, as the poet wrote, perhaps we would truly know "what God and man is."

Thus there is considerable profundity in the few lines of the poem. Its basic idea was known among the scholastic philosophers of the Middle Ages. They, too, assumed an intimate relationship between the "great world" and the "little world" and used words derived from the Greek for that relationship. "World" is, of course, *cosmos*, and *macro* meant "great." For the "great world," they used *macrocosmos*, and for the "little world," generally implying a human being, they said *microcosmos*. Their theory was that the macrocosm, the whole universe, is revealed in the microcosm; if you could understand man, you could see the whole universe reflected in him.

This idea of the interrelation of the individual and the totality is basic also in literature. It really represents what every serious

The fourth of five reviews by Dr. Freehof, in shortened form, appears this month. Dr. Freehof reviews current best sellers for the public in a series each autumn at the Temple Rodef Shalom.



novelist seeks to do. He deals with three or four people, perhaps in a family, or isolated somewhere, and spends three hundred pages on the conversation and thoughts of this handful. Why are they so important? Only because the novelist believes that this microcosm reveals the macrocosm; that his analysis of the emotions of the few people in his novel will touch the basic facts of human nature and so will be relevant to hundreds and thousands of people.

This essential task of the novelist always runs up against difficulties that arise from the very nature of the novel. The novelist usually selects one or two chief characters and lets the others fade into insignificance. For that reason, every novel is thwarting for the serious novelist. He wants to reveal the many-sidedness of life; but because he is compelled to follow the lead of his chief characters, much that he could have said is lost through the vagueness of the minor characters.

A select few among the novelists have made a rather unusual solution for this problem; namely, how to keep the novel unified, with the main characters carrying the theme, yet to give a more complete picture of life by developing minor characters.

The first solution was made, as far as I know, about 1860, by Anthony Trollope, the early mid-Victorian novelist. He wrote chiefly about the cathedral city of Winchester in a number of novels, calling the series *Chronicles of Barsetshire*. In *The Warden* there are two main characters and the rest are minor. Then, in *Barchester Towers*, which is about the cathedral itself, Trollope takes two minor characters from *The Warden* and develops them into the chief protagonists, letting the former main characters fade. In this way, in a series of novels, he is able to explore what there is reflected of the larger world by using in full all his

characters. Without spoiling the structure of any novel, he succeeds in creating a related chain of novels.

To write such a series, a novelist has to have a constantly shifting proportion of values and be able to push into the background a person whom he considered central a few years earlier. It is very difficult to do. Another chain of related novels was not written again for about thirty years, when the great French novelist, Emile Zola, wrote his Rougon-Macquart series. Zola took a certain family, corrupt, of evil heredity, and led them through a whole series of novels.

It took another thirty years before someone had the vitality to achieve this again, and this time it was an English novelist: John Galsworthy, in his *Forsyte Saga*, told the story of a wealthy, English, commercial family in six novels.

After these three giants, this sort of novel series has not been done again until now, in our own time. The novel, *The Affair*, by C. P. Snow, recently was published in America. Then some of the literary folk who knew more of Snow called our attention to the fact that Snow had written a whole chain of novels of which *The Affair* is the latest. The chain, and also the first novel, is called *Strangers and Brothers*. With *The Affair* creating considerable excitement in America, two others of the chain were soon republished in this country, and it seems probable that the others will be, too.

C. P. Snow is rather an exceptional person. He was trained as a physicist and was one of the fellows, as the professors are called, at Cambridge University. He left Cambridge for government service, where his chief responsibility was manpower procurement in the scientific field, how to find the proper scientists for radar work, for atomic work, and so on. For this work he was knighted. Meantime, in this busy life,

in the interstices of his time, he has been writing novels.

There is something rather unusual about this whole series. All novelists, when they come to a climax in their novels, try to select a place in which all the various elements and emotions and characters meet and solve their problems. Sometimes it will be in a general's tent or headquarters on a battlefield; sometimes, let us say, in a cloakroom of Congress. C. P. Snow has been the first man to make a committee meeting the locale for solving the problems of all his novels.

He believes that when men are thus together in a small committee meeting, their basic attitudes, their present feelings, future intentions, all participate in the issue which is being debated. He realizes there is no better place to reveal the relationship between accumulated character and temperament and a present task or responsibility than to put a dozen people into a committee; let them handle the situation and, at the same time, reveal themselves. He is the novelist-laureate of the committee room. Possibly he learned to appreciate what this modern committee confrontation means as he rose in government service and had to meet a variety of people in these little conferences. He observed who regularly took which point of view and who changed his mind and why, and began to realize that human character reveals itself when confronted with a task. Every one of his novels ultimately ends or climaxes in a discussion of a committee: either a committee of city council, as in his first novel; or a committee in a government office, called for a special purpose; or, as in two or three of his novels, and also here in *The Affair*, a committee of the fellows of one of the colleges at Cambridge.

To understand any one of his books, it is helpful to know something of all the rest

of them. The characters in *The Affair* have all appeared in previous novels, although each book is independent. In *The Affair* the characters who matter most are, first of all, the speaker, the protagonist, Lewis Eliot, very likely modeled on C. P. Snow himself. Lewis Eliot was trained, not as a physicist, but as a lawyer, and then became a fellow at Cambridge as C. P. Snow did, then went into government work and now has risen high in government service. Lewis Eliot watches the action of the various characters, he appears in all the novels, and is the bond of union between every story in every book.

Then there is his younger brother Martin, who took up a career in science. He is ambitious and alert to the political interrelationships between people, but is often moved by strange, nonselfish impulses. When he had the chance, a few years before this book begins, to be head of the British atomic effort, for some idealistic reason he refused to do so.

There is Sir Francis Getliffe, who has appeared in previous novels as a young scientist at Cambridge. He had done so much in radar that now, with World War II over, he is a member of the Royal Society, recipient of its greatest medal, and he has been knighted. He is a clear-minded, idealistic scientist, whose mind follows a problem to the very end. He is capable of ice-cold thinking and warmhearted reaction.

These men are now in their forties. There is in the college an active generation above them and also a generation below them. Among the older men, the generation in control of the college, there is the master, Dr. R. T. A. Crawford, of Scotch descent, a famous medical scientist. The story of his election as master is told in a previous novel, *The Masters*.

With him is Dr. Arthur Brown, a man in his sixties, the chief tutor of the college, a

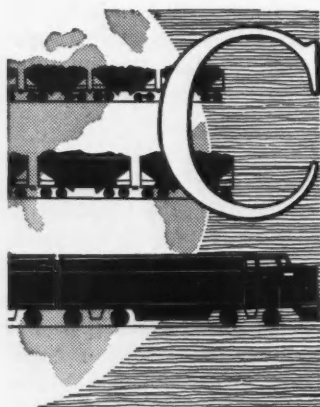
position similar to that of dean in American universities. Dr. Brown is a quiet man, a cultured gentleman, with remarkable skill in handling people. He does not expect too much for himself but loves to keep the great organization going by smoothing difficulties, by harmonizing opposites. He is the constructive politician of the college.

Then another older man is Nightingale, who is bursar of the college. Nightingale started as a scientist but never amounted to much. Then, somehow, he found his proper sphere in World War II and came out of the war a brigadier general. Now he is in permanent charge of the business of the college.

These are the important older people. The younger ones are new, most of them appearing for the first time in the series. The

younger people have no longer the liberal, semiradical attitude of the middle group. Eliot and Getliffe, and Eliot's brother Martin, and the men of their age had tended to be liberal and even radical in their youth; but the radical mood seems largely to have faded in this new, young generation. The newcomers tend to be high church, and Tory in politics. The first is Tom Orbell, also a scientist, a young man at the beginning of his thirties. His sole rebelliousness is against the older men of the college. He insists that the time has come for youth to take over. With him is Skeffington, an ex-Navy man of upper social class, also a conservative, eager to become a scientist.

Then there is the hero, or rather, the victim of the whole story, upon whom all the action turns, Donald Howard, and his wife



Coal... 3 TIMES AROUND THE WORLD EACH YEAR

The amount of coal mined each year in the United States would fill a freight train long enough to reach around the earth three times. The known reserves in this country will last at this rate for at least another thousand years. That is why coal is considered *our most dependable source of low-cost energy.*



*Pioneering in Coal Progress*  
**CONSOLIDATION COAL COMPANY**

Laura. Howard is a young man of comfortable, upper-middle-class origin who tries to be rough and coarse and proletarian. He is a Communist, and as a Communist he hates everybody and suspects everybody. The story of Donald Howard is *The Affair*.

It would be a magnificent subject for a doctor's degree to make a close study of these four great chains of interlocking novels; that is, of Anthony Trollope, of Emile Zola, of Galsworthy, and now of C. P. Snow. In each of these different series, people are studied in different environments, and each group has a different problem. The problem of Anthony Trollope is, how can the religious obligation be harmonized with family ambition? In Zola, how can a debasing heredity fight against a corrupting environment? In Galsworthy's *Forsyte Saga*, the problem is the power of money, its control over a family, and the battle of the younger generation for independence. C. P. Snow faces the grand problem of justice in human affairs: what justice can there be in an age in which the greater ideals of ethics seem to have faded from the lives of men?

The protagonists who deal with the ethical problem are precisely the matter-of-fact scientists who, presumably, are not controlled by inherited doctrines and old-fashioned ideals, but only with plain facts and discovered laws. The novelist puts these scientists against the historic background of an ancient college, and forces them to face the eternal problem of justice. The problem comes to a climax in a committee meeting, when each man's ideals, each man's ambitions, each man's planning for his own future is brought face to face with the personal question: Will you be—as Snow's first novel indicated—a "stranger," keeping away from another man's grief; or will you be a "brother," and involve and discommode

[Turn to page 126]

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## THE MUSIC OF WALTER PISTON

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Fine Arts Department of Carnegie Institute

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Saturday afternoon April 8, 3 o'clock

CARNEGIE MUSIC HALL

Remarks by Mr. Piston precede the music  
and question and answer period follows

\* \* \*

### THREE PIECES FOR FLUTE, CLARINET AND BASSOON (1926)

*Allegro Scherzando*

*Lento*

*Allegro*

BERNARD GOLDBERG, *flute*

ARTHUR KUBEY, *bassoon*

LOUIS PAUL, *clarinet*

### DUO FOR VIOLA AND VIOLONCELLO (1950)

*Allegro Risoluto; Andante Sereno; Allegro  
Brillante.*

GODFREY LAYEFSKY, *viola*

THEO SALZMAN, *'cello*

### QUINTET FOR WIND INSTRUMENTS (1956)

*Animato; Con tenerezza; Scherzando; Allegro  
comodo.*

BERNARD GOLDBERG, *flute*

LOUIS PAUL, *clarinet*

ARTHUR KUBEY, *bassoon*

SID KAPLAN, *French horn*

ARTHUR KRILOV, *oboe*

### STRING QUARTET No. 4 (1952)

*Soave; Adagio; Leggiero Vivace; Con Fuoco.*

THE SCHENLEY STRING QUARTET:

WILBERT FRISCH, *violin*

OZZIE DEPAUL, *violin*

AARON CHAIFETZ, *viola*

ALLEN SHER, *'cello*

\* \* \*

Programs are made possible through combined grants from the Howard Heinz Endowment, The A. W. Mellon Educational and Charitable Trust, the University of Pittsburgh, and a Trust Fund of the Recording Industries obtained through cooperation of Local 60, American Federation of Musicians.



## The world's biggest radio telescope

This is an artist's concept of the world's biggest radio telescope. This giant telescope will use radio waves to locate objects that are billions of light years out in space. The dish-shaped mirror will be 600 feet in diameter—about the size of Yankee Stadium. It will be the biggest movable radio telescope the world has ever known.

As you'd imagine, it is going to take a lot of material to build an instrument this size. The American Bridge Division of United States Steel, as a major subcontractor, is fabricating and erecting 20,000 tons of structural steel for the framework alone. The U. S. Navy, through the prime contractor, is supervising the entire job. When it's completed, there'll be a power

plant, office buildings and personnel facilities for a permanent 500-man crew. The site is near Sugar Grove, West Virginia.

United States Steel produces many of the materials that are essential for construction: structural carbon steel; high strength steels; alloy steels; stainless steels; steel piling; steel drainage products; cements; slag; reinforcing bars; welded wire fabric; wire rope; steel fence; electrical cable; and other allied products.

The most important building projects in our nation depend on steel. *USS is a registered trademark*



**United States Steel**



## WATER SNAKES

NEIL D. RICHMOND

THE opening of trout season, only a few days away, is also the opening of the "snake season." About the time the trout fishermen are coming out of their winter quarters and heading for the streams, the snakes are emerging from hibernation.

Of course, if April 15 arrives with its usual combination of snow flurries, freezing rain, and raw winds, only the fishermen will be out; snakes will sensibly wait for warmer weather. As the season progresses, however, the two are bound to see more of each other.

So this seems an appropriate time to discuss snakes, especially water snakes. Along many trout streams in the mountains, rattlesnakes and copperheads may also be met with, and while they may scare the fisherman, they do not seem to anger him in quite the way water snakes do.

Water snakes are probably the most disliked snakes in Pennsylvania. Poisonous snakes are certainly more feared, but the water snakes make up for this by their abundance, their conspicuousness, and, worst of all, they eat fish! And heaven help the man or beast who in any way arouses the ire of Pennsylvania fishermen!

In defense of the water snakes I should like to discuss a few pertinent facts with the thought in mind that, even though still disliked, these snakes will be better understood. We might as well understand them, for they are going to be around.

It is common knowledge that the water snake was an old resident along the streams of this Commonwealth when the white man arrived. The Indian, the elk, the panther, and the wolf have seen the light of Progress and have become extinct, or practically so. Not so the water snakes. In fact, were it not

for stream pollution, they would probably be more numerous today than they were before Columbus. The reason for this state of affairs is that, while water snakes can tolerate a wide range of stream temperatures, they really thrive in relatively warm streams. Agriculture and deforestation changed trout streams to bass streams, and changed little feeder streams that formerly harbored spawning brook trout into sources of bait minnows. All of this the water snake must have viewed as a real improvement.

There are three species of water snake in western Pennsylvania. Two of these are abundant and are likely to be found almost anywhere in this area; the third species is so rare as to be a scientific curiosity.

1. NORTHERN WATER SNAKE. *Natrix sipedon sipedon*. This is the largest, most abundant, and most widely distributed water snake in Pennsylvania, as well as in all the northeastern United States. It reaches a maximum length of 51 inches, and large specimens are so heavily bodied they look even bigger than they are. They are irritable, and, if a fisherman wants to argue "who owns this stream," they will respond by coiling and, if possible, biting. Their generally bad disposition is probably the source of the belief that water moccasins live in Pennsylvania. The truth is, the poisonous water moccasin is a swamp-loving relative of the copperhead and does not occur in

---

Mr. Richmond is curator of amphibians and reptiles at Carnegie Museum. He has collected snakes in every county of Pennsylvania and his native West Virginia. Graduate of the University of West Virginia with master's degree from the University of Michigan, he has done field work for the Museum, beginning in his student days, since 1933.

Pennsylvania or any of the bordering states.

The northern water snake is also the snake that causes most of the controversy as to whether water snakes are serious predators on fish. Actually this species lives almost entirely on fish, but principally on nongame species, such as minnows, catfish, and so on. This is not a noble trait of the snake, merely a practical one. It feeds on what is most readily available, and this in turn means species of fish that are either abundant or easy to catch. In the crowded conditions of a fish hatchery, water snakes can and do feed heavily on trout or whatever species is being raised. However, this is a man-made situation. In the wild, the so-called forage or "rough" fish vastly outnumber the "game" species.

In many ponds and small lakes where small sunfish have multiplied almost to the exclusion of larger game fish, water snakes are useful in restoring the balance, as they will feed heavily on overabundant species.

The northern water snake is a prolific species and to date has managed to maintain its numbers in the face of "vermin" campaigns, snake-killing contests, and similar misguided activities of sportsmen. Young water snakes, usually 16 to 40 in a litter, are born in late summer and are on their own from the day they are born.

2. **QUEEN SNAKE**, *Natrix septemvittata*. The only water snake in Pennsylvania that has stripes instead of cross bars or spots, it feeds almost entirely on crawfish and usually prefers the stony, warm-water streams. This relatively small, slender water snake, about 15 to 24 inches long, has a mild disposition and rarely bites, unlike its near relative.

3. **KIRTLAND'S WATER SNAKE**, *Natrix kirtlandi*. A prairie species, this snake is so rare in western Pennsylvania that it scarcely rates mention here. The distinctive color of this snake makes it easy to identify; it has

four rows of dark brown blotches on its back, and the belly is a bright brick red with a row of round black spots down each side.

This species is abundant in some parts of western Ohio, but in Pennsylvania it is one of our rarest species and has been found in only six localities in four counties, one of these in the Ligonier Valley. Kirtland's water snake is the least aquatic of the three. It is more often found in wet meadows in the vicinity of streams than in the water. So far as known, it feeds almost exclusively on earthworms and slugs. Since this species is so closely associated with the prairies of the Midwest, its occurrence in the mountains of this state has for years fascinated and puzzled biologists.

Specimens of all three water snakes may be seen in Bird and Reptile Hall.

## THE ACADEMIC MICROCOSM

[Continued from page 123]

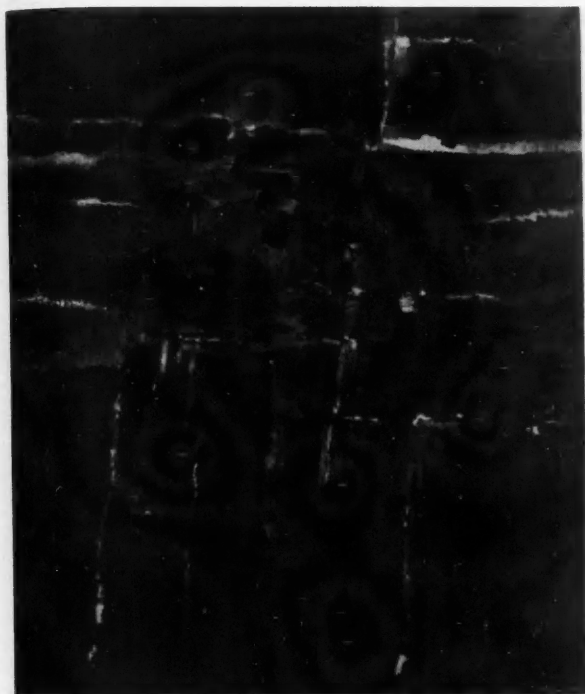
yourself and participate in an act of justice?

He wants to indicate that, while we are complex and all have mixed-up motives, among our motivations there are still some of the great ideals; and it is possible for a variety of men, some devoted to the honored old institutions that must be protected, some having personal ambitions, some having different life doctrines, to deal with an unlikable, nasty troublemaker who does not help you help him, and yet, nevertheless, do justice, substantial justice, if not absolute justice.

In this way, C. B. Snow demonstrates what Tennyson was saying, that from our smaller human affairs we learn of eternal truths: that the ethical ideal which Kant compared to the starry heaven itself is not far removed from our modern world, but lives in our confused and often trivial human affairs.



## CARNEGIE INSTITUTE PURCHASE PRIZES

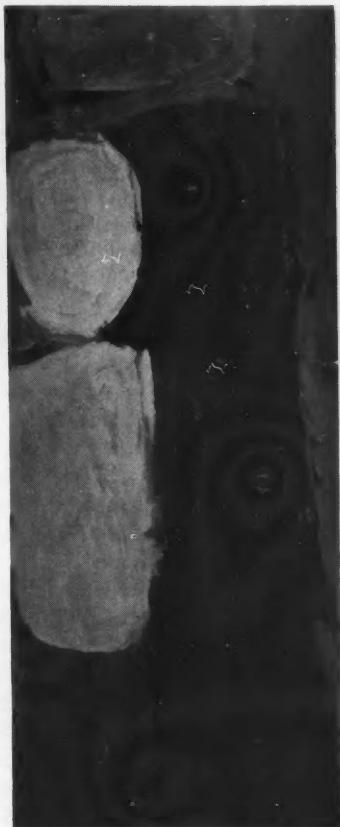


BLACKSCAPE BY TOM ROWLANDS

TWENTY-FIVE prizes totaling \$4,600 were awarded in the 51st annual exhibition of the Associated Artists of Pittsburgh, and in addition the two Carnegie Institute purchase prizes illustrated here. The two paintings go into the Institute's Contemporary Collection for further acquaintance. The work of local artists and craftsmen is on display at the Institute for six weeks through April 20.

The exhibition is highly selective this year, with 150 artists represented by 292 pieces chosen by the jury from 1,400 entries. These include 98 oils, 43 sculptures, 57 graphics, 30 water colors, and 64 examples of varied crafts including 6 tapestries and 11 pieces of jewelry.

SENSE OF SHAPES:  
BLUE, MAUVE, AND OCHRE  
BY JEANNE LEGER



# THE BUSY OHIO

MARVIN J. BARLOON

THE destiny of metropolitan Pittsburgh is bound up with its status as the largest city on the navigation system of the Mississippi River and its tributaries, and with its commanding position on this system. The central stream of Mississippi commerce extends from Pittsburgh to Houston, Texas. The northern Mississippi between Minneapolis and St. Louis, handicapped by winter freezing, is relatively lightly traveled. The really massive traffic moves on the Monongahela, the Ohio, the lower Mississippi, and the Gulf Intracoastal Waterway as far west as Houston.

The Ohio River is a major segment in the nation's central stream of waterway commerce. The width of the respective rivers in the chart on the opposite page measures the relative tonnage of traffic per mile. The entire main stream extends for 2,450 miles from Fairmont, West Virginia, to Houston, and it will be noted that, in this system, the greatest density is concentrated on the Monongahela River, with the busier reaches of the Ohio closely rivaling the lower Mississippi for second position.

The drainage basin of the Ohio, including all tributaries except the Tennessee, lies within eleven states and, in 1956, had a population of about 19 million persons. The economic benefit derived from the Ohio, of course, extends to populations far beyond the confines of the river basin. A number of large urban centers, however, are right on the banks of the Ohio and its navigable tributaries. In addition to Pittsburgh, these include Cincinnati, Louisville, Nashville, Charleston in West Virginia, Evansville in Indiana, the area centering on Huntington, West Virginia, and Ashland,

Kentucky, and numerous other important industrial centers.

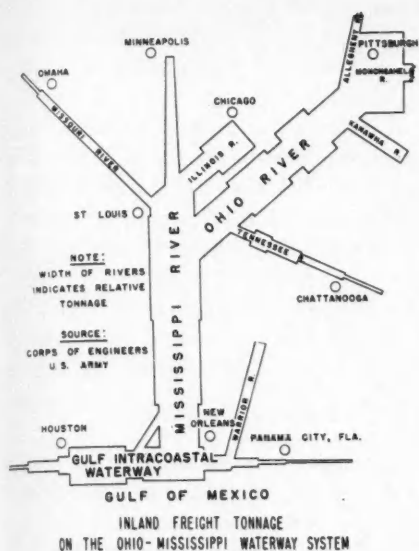
Freight movement on the Ohio River has been growing for a very long time in persistently increasing amounts. During the 1930's it went up from about 1.5 billion ton-miles per year to nearly 4.0 billion. During World War II, the River played a central part in the military effort, and traffic increased further to about 7.0 billion ton-miles. Growth proceeded even more rapidly after the war and, in 1959, exceeded 17.6 billion ton-miles of freight. If the past growth rate were to continue, it could conceivably reach 50.0 billion ton-miles by 1970.

Traffic growth on the Ohio River has been a key factor in an enormous industrial expansion. Since 1950, over \$15 billion has been invested in major new plants and plant expansions along the river from Pittsburgh to the Mississippi. Most directly affected are such basic industries as iron and steel, coal mining, petroleum refining, the generation of electricity, atomic energy, and aluminum reduction.

The nation's major iron- and steel-producing area, the Pittsburgh-Youngstown-Wheeling district, is a "steel surplus" area, and to operate economically it must ship a larger portion of its output into consuming areas that are geographically closer to competitive producing points than is true of other steel districts. Its Ohio River location brings the district into competitive reach of western

---

Dr. Barloon, professor of economics at Western Reserve, has written on transportation and industrial development for various national publications. A short version of his address before the Ohio Valley Improvement Association last year is here excerpted from *Greater Pittsburgh*.



and southern markets. Whereas the average length of haul of all commodities moved on the Ohio River is 219 miles, that of iron and steel is approximately 700 miles. Most steel, in fact, moves the entire length of the river to destinations on the Mississippi, much of it shipped as far away as the Gulf Coast.

In addition, the steel industry achieves a competitive production cost by bringing in most of its coking coal by barge. For the Pittsburgh district as a whole, the cost of inbound coal transportation to coke ovens runs about 15 per cent of the comparable cost in the Chicago district, offsetting, just about in full, the Pittsburgh disadvantage as to iron ore.

Finally, the steel industry's cost of fuel oil is significantly affected by barging on the Ohio River. An open-hearth furnace consumes about 23 gallons of fuel oil per ton of steel ingots. Whenever the industry in the local area is operating at moderately high

rates, local supplies are inadequate, and oil has to be brought in by barge from the Southwest over the Mississippi and the Ohio Rivers. Thus, barging cost sets a ceiling on the price of fuel oil in the Pittsburgh area.

The growing movement of bituminous coal on the Ohio River plays an economic role at least as vital. The beneficial consequence of this traffic extends back into the coal mining industry and forward through the generation of electric power into a broad base of industrial development.

Over 80 per cent of all the bituminous coal mined in the United States is produced in the six states of the Ohio Valley, and the nation's coal industry is thus primarily an Ohio Valley industry. Transportation is especially crucial to coal, for transportation cost frequently equals half the delivered price of coal to consignee. Thus, the Ohio River barging system is a godsend to this industry.

To coal-consuming industries, the impact of river shipping has been little short of spectacular. While coal is consumed by a large number of manufacturers, including, notably, iron and steel and chemicals, its broadest influence is in the generation of electricity. With the energy content of coal converted into electric energy, this fuel constitutes the primary source of power for an endless variety of consuming industries and is carried by high voltage transmission lines in complex systems of power interchange to consuming centers well beyond the confines of the Ohio Valley.

Because of the low cost of water-borne coal, and because of great advances in the transmission of current, the electric utility industry of the Ohio Valley has grown enormously during the past twenty years.

Because cheap and abundant electricity is so vital to aluminum reduction, most of the national growth in aluminum capacity

since 1956 has taken place on the banks of the Ohio. Electricity accounts for about 20 per cent of the total price of pig aluminum.

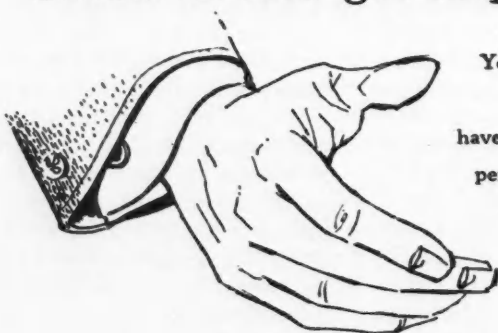
The rising tonnage of chemicals shipped on the Ohio reflects a correspondingly immense growth in the chemicals industries in this area; the Ohio Valley has now become one of the nation's major chemical-producing centers. These plants constitute a broad base of industrial strength because their products serve a numerous variety of manufacturing industries, transmitting the economy of low-cost chemicals very broadly throughout the economic structure.

The movement of petroleum and petroleum products is among the most efficient on the river, achieving costs directly competitive with pipe-line movement. Because

so large a portion of the nation's oil reserves are geographically remote from the major concentrations of population and consuming industries, the transportation structure of the industry is especially crucial. Most movement of crude oil and products is by pipe line, and pipe-line transportation is very economical. However, a pipe line represents a fixed investment of fixed capacity between fixed points. Barge transportation, subject to easy redirection as to origins and destinations, provides a vital supplement of flexibility, providing immense savings in inventories and also in pipe-line investment.

Pittsburgh's corridor to the Mississippi is the Ohio River. It is a constricted corridor. The Ohio is a canalized river, and barge traffic from Pittsburgh must find its way

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through a system of 46 locks and dams before it reaches the open Mississippi. These locks and dams were completed as an integrated system in 1929. But the volume of traffic has multiplied by more than ten times since that date and is still growing rapidly.

Two new high-lift dams are to be placed in service on the Ohio River this year that will stand as massive landmarks to the turning point now at hand in the long growth career of the Ohio. They open the door to a future of renewed and sustained expansion. These are the New Cumberland Dam, only 54 miles downstream from Pittsburgh, and the Greenup Dam in the vicinity of Huntington, West Virginia.

These two are only the first in a series of 19 massive structures programmed under the Corps of Engineers of the United States

Army to replace the present 46, most of which are badly outmoded. But only four others are actually under construction. Action on the remaining 13 is subject to indefinite postponement. Meanwhile, traffic jams, ever more prolonged and costly, clog the old locks.

It costs from \$50 to \$100 an hour to hold a tow in waiting for lock access, and cost of congestion at one of the old locks amounts to over 21 per cent of the total barging cost. On a good many marginal movements, this differential is enough to keep a tow off the river. When traffic growth is choked off in one or a few segments of the River, it is not a purely local problem but may be felt over a thousand miles away.

The life of Pittsburgh is thus interwoven with the life of the entire Ohio Valley.

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## PITTSBURGH IN PICTURES

*Local views from the extensive photographic collection at Carnegie Library from which prints may be ordered for use in publications and exhibits*



CHRISTMAS TREE IN OLD ALLEGHENY

Allegheny City Hall at left, Market House at right. City Hall was razed in 1937 to make way for Buhl Planetarium. Illuminated clock dials of Carnegie Free Library of Allegheny, now Allegheny Regional Branch, may be seen.



BUILDINGS AT THE SANITARY FAIR IN OLD ALLEGHENY, 1864

Pittsburgh Sanitary Commission was organized early in the Civil War to send medical aid to the front lines. On one such expedition Felix R. Brunot, physician, engineer, and humanitarian was captured with a field hospital and held a short time in infamous Libby Prison. Under Dr. Brunot's direction, the Sanitary Fair was staged in June, 1864, and raised \$322,217 in 18 days. The Bazaar was one of the Fair buildings on the Commons, near Allegheny's new City Hall.





EASTER PARADE IN 1911 OUTSIDE CARNEGIE MUSIC HALL

After Easter worship services in Music Hall, the latest in hat fashions might be seen, then as now. Trolley at Forbes and Bellefield pulled a trailer car to handle the crowd. On the scene as usual, with his bulky Graflex camera, was Frank E. Bingaman, one of the city's first news photographers. During his 43-year career, starting in 1904, he took pictures for various Pittsburgh newspapers. Pennsylvania Room of Carnegie Library now cherishes his collection.

SHOWN here are four pictures in the recently assembled collection of 20,000 photographs of Pittsburgh people, places, and public events, past and present, for use in publications and displays.

Arranged in albums and files in the Pennsylvania Division of Carnegie Library of Pittsburgh, the collection includes:

1. historical pictures contained in the Library's Bingaman Collection;
2. photographs assembled for *The Pittsburgh Album*, published in 1959 for Pittsburgh's Bicentennial observance;
3. and the pictures of mid-twentieth-century Pittsburgh development from the Pittsburgh Photographic Library originally established at the University of Pittsburgh.

This collection may be consulted Monday through Saturday, 9:00 A.M. to 5:00 P.M.

The Library welcomes gifts of Pittsburgh photographs for this collection.



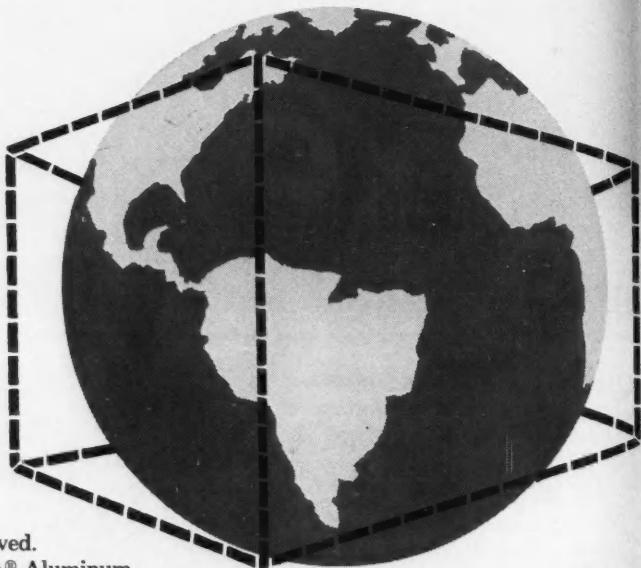
Courtesy Pennsylvania Railroad

#### FIRST TRAIN ARRIVES FROM PHILADELPHIA

On December 10, 1852, the first through train arrived at East Liberty Station. It operated over Philadelphia & Columbia Railroad, the Pennsylvania Railroad, and the Allegheny Portage Railroad (ten inclined planes). This is earliest photograph in Carnegie Library collection.



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W. E. CLYDE TODD AT HIS UNGAVA MANUSCRIPT



JUAN J. PARODIZ MAKES NOTES ON A SNAIL

## BEHIND MUSEUM DOORS

M. GRAHAM NETTING

THE leading science museums of the world are the great depositories of actual objects of the natural world and of man's development. These reservoirs of collections are irreplaceable resources in constant use by scholars in all fields. Only scholars musing over collections justify the appellation "museum." Out of such musings come scientific discoveries, new educational contributions, and improved public exhibits.

As collections are the foundation of a museum, scholars are the superstructure. Unfortunately the public sees little of either as it enjoys the end results—the exhibition halls, publications, radio and TV programs. Most visitors are vaguely aware that the men with the answers are plugging away behind closed doors at mysterious tasks. My purpose in this article is to open some of the doors at Carnegie Museum for all too brief glances at the scientists at work.

Museum scientists tend to have three categories of research activities—a geographic area of study, specialization upon a group of organisms, and an experimental project. In any year, but not necessarily in the same season, studies in each category move forward. Instead of decreasing efficiency, concurrent attention to varied projects stimulates greater productivity by affording mental change of pace, indoor study when field work is impossible, and broader coverage of reference materials. Curators at most museums have many duties—care of collections, planning exhibits, answering public queries, and others—that limit time for research.

Ideally, at least half of a curator's time should be devoted to research, so that he may utilize his training to make those unique contributions to society that require collections to provide basic data. The vast fields

of agriculture, public health, and experimental biology are dependent upon a mere handful of taxonomists for the names of the organisms that transmit diseases, serve for experimentation, or provide the drugs, foods, and other materials for human needs. It is poor economy to have a trained scientist do his own typing, for example, yet few museums are able to provide enough supporting services to utilize curatorial skills most efficiently. Fortunately this limitation upon scientific productivity has been recognized, and both private donors and governmental agencies are playing an increasing role in alleviating the situation. It is still possible to state categorically, however, that even an additional two thousand dollars annually for research support of each museum scientist in the United States would greatly accelerate his studies. In all too many fields our scientists are better trained but unfortunately fewer and less well financed than in competing nations.

#### MAMMALS

Curator of Mammals J. K. Doult, although recently preoccupied with the preparation of a manuscript on the mammals of Pennsylvania, is deeply interested in the influence of isolation upon speciation. He has collected landlocked seals in Ungava, dwarf deer on Cumberland Island, and fancy squirrels on southwestern mountain peaks to determine how long it takes nature to produce a new subspecies. In cooperation with Dr. John C. Donaldson, a research associate, he has engaged in a study of antlered doe deer during the past three Pennsylvania hunting seasons. This study is yielding important data upon some types of endocrine malfunction in mammals. Dr. Doult and several electronic experts are engaged in devising radio and recording equipment to trace the daily movements

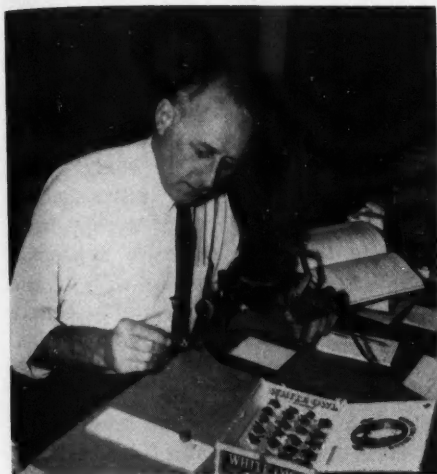
of deer and other mammals.

Work upon the study of Pennsylvania mammals has occupied Assistant Curator Caroline A. Heppenstall's time in recent years, but she may be expected shortly to switch to other mammalogical problems.

Assistant Curator John E. Guilday knows more about the mammal faunas of the Appalachians, from Ice Age to recent times, than any contemporary scientist. This knowledge has not been gleaned from books, but patiently accumulated through examination of scores of thousands of bones and bone fragments from caves, sinkholes, and Indian refuse piles. Over twenty thousand such items from a long-occupied Indian shelter in Huntingdon County, turned over for study by the State Historical and Museum Commission, have enabled Mr. Guilday to date vegetation changes—more flying squirrels when the area was forested, more rabbits when it was cultivated—and also to determine, by studying knife cuts on the bones, how the Indians skinned their deer. Continuing excavation of a sinkhole in Bedford County by a dedicated group of local speleologists, a number of whom have been appointed honorary members of the Museum staff in recognition of their services, has yielded a fossil jack pot and permitted Mr. Guilday to picture the fauna of Pennsylvania ten thousand years ago. He has

Dr. and Mrs. Netting are now in Europe, studying the research and exhibition programs of museums in fifteen countries, and visiting zoos, botanical gardens, and nature preserves. During her spring vacation from the University of Besançon, their daughter Jane—who is studying in France for a year under the Antioch College Education Abroad program—will join her parents in their travels. Dr. Netting, who never misses an opportunity to advertise western Pennsylvania, is showing slides of the Museum, Powdermill Nature Reserve, and Western Pennsylvania Conservancy at museums and universities in western Europe.

trapped mice, but so far as I know he never built an improved trap. Nevertheless the mailman beats a path to his door—he works at home in a basement laboratory equipped



HERBERT E. MILLIRON STUDIES BUMBLEBEES

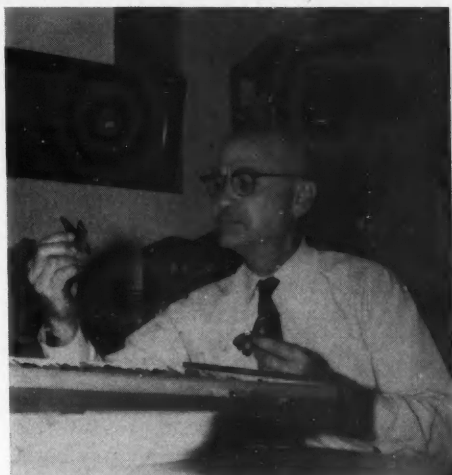
by the Museum—with packages of puzzling bones sent for his examination by specialists in many other branches of science.

#### MAN

Dr. James L. Swauger, Assistant Director and Curator of Man, is far more than a triple-threat man. Besides directing the entire exhibit program of the Museum, cheerfully executing the varied tasks with which I overload him, and curating large and varied collections, he manages to do research! On three trips to the Near East he has dug a temple in South Arabia, investigated dolmens, and hunted ancient iron mines and smelter sites in Palestine. At home he has excavated Colonial sites in the Upper Ohio Valley, and is currently investigating all reported Indian rock carvings or petroglyphs in a three-state area. Since joint authorship (with Dr. William F. Albright and Dr.

David Noel Freedman) of a book on Biblical archeology, and civic and family duties do not require every moment of his spare time, Dr. Swauger also studies local stink bugs as a zoological respite.

No more precise confirmation of the museum dictum that research is a prerequisite for exhibition and education can be offered than in the field of local archeology. In 1949 western Pennsylvania's prehistory was virtually unknown. A crash program was insti-



RICHARD M. FOX INSPECTS A SWALLOWTAIL

tuted under auspices of the Sarah Mellon Scaife Foundation, and two promising young archeologists—Dr. William J. Mayer-Oakes and Dr. Donald W. Dragoo—were added to the staff to conduct the investigations. (Dr. Mayer-Oakes resigned in 1956 to teach at Toronto and subsequently moved to the directorship of the University of Oklahoma's Stovall Museum, but he merits full commendation for energetic prosecution of the initial archeological survey.) In less than a decade these two scientists, ably assisted by a large corps of amateur archeologists they enlisted and trained, mapped and

studied over one thousand sites in the Upper Ohio Valley, pushed known human occupation of this area back eight thousand years, added three new cultures to local prehistory, wrote almost a hundred technical and popular articles and one full-length volume (Mayer-Oakes' *Prehistory of the Upper Ohio Valley*), and planned an exhibit area, SPEARPOINT AND POTSHERD, that opened on the Museum's third floor in December, 1958. Since then Dr. Dragoo has excavated several major sites and has intensified study of the Adena Burial Mound Culture, extending his investigations geographically to manifestations of this culture in other eastern states.

#### BIRDS

The greatest traveler on the staff, Dr. Arthur C. Twomey, Curator of Birds, in spite of time-consuming duties as Director of the Division of Education and lecture engagements throughout the country, still manages to fit in enormously productive expeditions to the Arctic, the American tropics, and, most recently, a five-month safari to Africa. As leader of the Matthew T. Mellon-Carnegie Museum African Expedition, in 1960, Dr. Twomey obtained large collections of birds, mammals, and plants, as well as insects and reptiles, in Kenya, Uganda, and Tanganyika. These specimens will become of increasing value to science as some of the isolated forests where they were obtained disappear before the onslaughts of native agriculture. Dr. Twomey has studies under way of the birds he collected previously on several expeditions to the Mackenzie Delta and to Honduras.

Two months in the Philippines in 1956, attached to a University of Pittsburgh public-health team investigating the role of birds and mammals in puzzling human fevers, launched Dr. Kenneth C. Parkes upon productive and needed studies of the

taxonomy and distribution of Philippine birds, especially those of Luzon. Nineteen publications have resulted, and a striking new species of rail has been discovered—an epochal event, since it has been estimated that the entire world probably harbors fewer than fifty undescribed species of birds. New World birds are, none the less, Dr. Parkes' first love. He left last month for Argentina, to spend several months with a colleague, Dr. Philip S. Humphrey of Yale's Peabody Museum, collecting birds of southern South America to supplement Carnegie Museum's extensive neotropical collections. Dr. Parkes is also engaged in a study, sponsored by the National Science Foundation, of the development of bird plumages, in cooperation with Yale graduate student George A. Clark, Jr.

I am pleased to include one "scoop" in this recital of research. Curator Emeritus W. E. Clyde Todd has just capped with title page an 18-inch stack of manuscript comprising *The Birds of the Labrador Peninsula*. Mr. Todd, who at eighty-six years still commutes daily from Beaver, even during Arctic weather, made his first expedition to Ungava in 1901, long before easy air travel. On nineteen following expeditions he traversed many then unmapped areas, often by canoe or dog sled. For many years, however, studies of local and tropical birds claimed his prior attention at the Museum, and he was not able to concentrate on the Labrador avifauna until he retired in 1946. Although several publishers have indicated interest in seeing the now completed manuscript, prompt publication of a work of this magnitude may hinge upon finding partial subsidy.

#### INVERTEBRATE FOSSILS

Dr. E. R. Eller, Curator of Geology and Fossil Invertebrates, can place a fragment of well core under his binocular, and—if



it be fossiliferous enough—identify its geological position. He belongs to a very select international group, a mere handful of scolecodont hunters, experts in finding, identifying, and describing the minute jaws of marine worms that swarmed in world oceans hundreds of millions of years ago. He uses acid to dissolve limestone, leaving a residue of tiny, black jaws for microscopic examination and drawing. Such methodical study is hard to glamorize, but it may help to locate oil for your car where romantic wildcatters have failed.

#### VERTEBRATE FOSSILS

For most of its lengthy history the world got along without many gnawers, but rather suddenly, about thirty million years ago, varied types of rodents—squirrels, field mice, beavers, pocket gophers, and kangaroo rats—appeared on the scene. Gulf Associate Curator Craig C. Black is presently concentrating upon the squirrels' family tree, a first project in a long-range study of rodent evolution. Lest he become a cloistered genealogist, however, he devotes his summers to the study of animal communities that existed twenty to thirty million years ago in eastern Wyoming, using fossils as indices to the climate and vegetation of that time.

#### PLANTS

Curator LeRoy K. Henry and associates added seven previously unrecorded plants to the flora of Pennsylvania in 1960, a clear indication that our knowledge of the botany of this area is still incomplete. Dr. Henry is now concluding a six-year study of the *Ferns and Fern Allies of the Upper Ohio Basin*, before returning to his studies of the local fungi, upon which he has published eight papers in previous years. During postman's holidays at Powdermill Nature Reserve he has tallied 703 kinds of plants and

launched upon investigations of strip-mine revegetation and Trillium reproduction and growth. Dr. Henry's expert knowledge of fungi, particularly, qualifies him to serve as a consultant to local hospitals on plant poisoning cases.

For ten years Mrs. Dorothy L. Pearth, Assistant Curator of Plants, has devoted vacation time to botanical studies of the Ridge and Valley area of Huntingdon County, Pennsylvania, where she has collected 517 kinds of plants. Although work on the Herbarium pre-empts most of her Museum hours, she is engaged in illustrating some 250 kinds of fleshy fruits that occur in western Pennsylvania.

A busy lifetime of teaching, botanizing, and university and museum administration fortunately failed to sap the energies of Director Emeritus O. E. Jennings, whose hundreds of publications range in subject matter from mosses, fossil plants, tropical botany, and Presque Isle ecology to the sumptuous two-volume *Wildflowers of Western Pennsylvania and the Upper Ohio Basin*. After more than a decade of retirement, Dr. Jennings' record of daily attendance at the Museum merits a constellation of gold stars on his forehead. His botanical studies continue, with especial emphasis upon the ecology of certain prairie plants that have persisted in western Pennsylvania since the granddaddy of local dry spells about three thousand years ago.

#### INVERTEBRATES

Curator J. J. Parodiz uses snails, both terrestrial and fresh-water, and fresh-water bivalves as well, to solve problems of paleogeography. Although he has published upon certain North American mollusks since the Museum imported him from Buenos Aires nine years ago, he is internationally known for his familiarity with South American



malacology. He made one collecting trip to Argentina in 1959, and is now there again, working in the Paraguay-Paraná basin under a National Science Foundation grant, collecting larval stages, particularly, of two puzzling molluscan families that defy classification by external appearances alone. Since present distribution cannot be explained without knowing past distribution, Mr. Parodiz has lately turned his attention to fossil shells as well, and has found added confirmation that South America received its snails in two migrations, about fifty million years apart, from North America.

#### INSECTS

Dr. George E. Wallace, Curator of Insects and Spiders, is sadly limited in research time by the exigencies of curating a collection of millions of insects and the handling of daily appeals for information from the public and requests for specimen loans from entomologists. His own specialty is a group of chalcid wasps of such economic importance that each discovery of a new species or clarification of relationships has significance far beyond its factual presentation.

Associate Curator Harry K. Clench concentrates upon revisional studies of certain butterflies and moths: a world-wide family of primitive moths with wood-boring larvae, certain moths that parasitize wasps, and African and American butterflies of the family to which our coppers, blues, and hairstreaks belong. He is also adept at developing mathematical formulae to explain biological phenomena, and is productively engaged in continuing studies of butterfly fluctuations and life histories at Powdermill Nature Reserve.

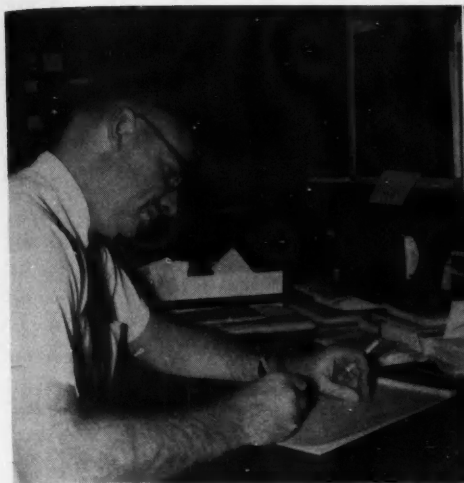
Dr. Richard M. Fox, Associate Curator of Insects, is the world's leading authority upon the Ithomiidae, a family of tropical American butterflies. He has studied the collec-

tions of these gaudily marked butterflies assembled by many museums and has published fifteen short reports and two (of a planned nine) extensive monographs on the family. He is also engaged, with several collaborators, in preparation of a book on the butterflies of Liberia, utilizing extensive collections he made during five years spent there as a medical entomologist and drug plant explorer. Happily, the National Science Foundation has sponsored the Liberian studies, enabling Dr. Fox to hire an assistant and to obtain urgently needed specimen storage cases. With the end of this project in sight, Dr. Fox is planning an entomological expedition to Baja California in 1962. He hopes also to determine, when funds are available, whether western Pennsylvania mosquitoes constitute any threat to man or birds.

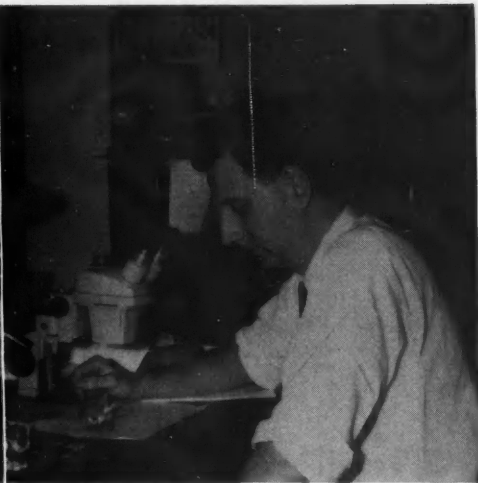
Dr. Herbert E. Milliron, formerly of Lycoming College, buzzed over to Pittsburgh last summer to spend a year at Carnegie Museum completing a monograph on West-



*Photos by M. Graham Nettling*  
KENNETH C. PARKES WITH WOODPECKER SKINS



DONALD W. DRAGOO RECORDS INDIAN ARTIFACTS



CRAIG C. BLACK COMPARES WOODCHUCK JAWS

ern Hemisphere bumblebees, a project sponsored by the National Science Foundation. Several staff members have been stung by Dr. Milliron's enthusiasm and have begun attempting to collect bumblebees without being stung. Thus, new and welcome scientific associates are important in the cross-fertilization of field work.

#### AMPHIBIANS AND REPTILES

Curator Neil D. Richmond's friendly mien is, happily, unchanged in spite of recent intimate association with snappers, a very primitive but tasty group of turtles. Only four kinds persist today; the common snapping turtle is highly successful in the eastern United States and a near relative flourishes in Florida, but the remaining two in Central and South America are too rare to fill many soup kettles. Mr. Richmond's herpetological interests are extremely varied, however. He has studied frog life histories, chased salamanders up and down the Appalachians, and pioneered plowing as a technique for collecting rare burrowing snakes. He is

presently studying ten-thousand-year-old bones from Bedford County sinkholes to determine if Pennsylvania was snakier earlier.

This chronicle fails to exhaust the research activities of Carnegie Museum. Space has forced me to omit mention of the work of the many honorary staff members whose researches are related to the Museum.

I hope the twenty colleagues whose serious and fundamental studies I have touched upon so lightly will forgive my brevity and my levity. I feel most strongly that Carnegie Museum's small but extremely able research team—the very reason for our existence as a *museum*—is making significant contributions to the increase and diffusion of knowledge among men, and for men. Pittsburgh and the tristate area are fortunate in having such scholars here to write, speak, answer questions, and to attract visitors from afar. Their discoveries benefit the world and bring acclaim to this area. Adequate support of their studies should be a matter of local pride.

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